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**PHOTOGRAPHIC
INTERPRETATION
REPORT**

**NATIONAL PHOTOGRAPHIC
INTERPRETATION CENTER**

**PROBABLE PROPELLANT
STORAGE FACILITIES, USSR**

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ABSTRACT

1. Twelve probable missile-propellant storage depots have been identified in the USSR. All are larger than bi-propellant storage facilities at airfields which have ASM support facilities, but the layout is similar. The 12 storage depots have construction features that are consistent with storing missile propellants, and each is large enough to serve more than one operational missile facility.

2. This report describes the characteristics of the depots and provides a location map and an annotated photograph of a representative depot.

INTRODUCTION

3. Twelve probable liquid-missile-propellant storage depots have been identified at or near petroleum storage facilities in the USSR (Figure 1). These depots are in areas which contain relatively high concentrations of facilities associated with surface-to-surface missiles (SSMs) and surface-to-air missiles (SAMs). The one exception is at

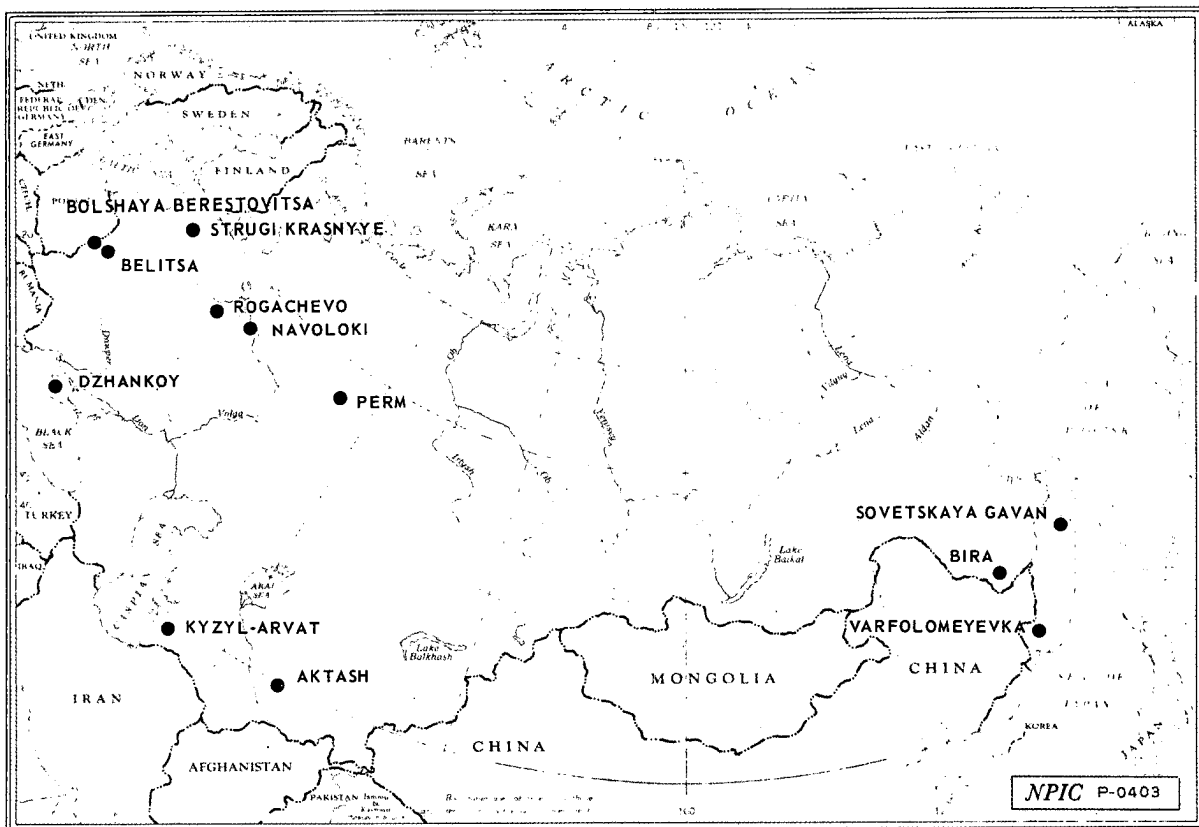


FIGURE 1. PROBABLE PROPELLANT STORAGE FACILITIES, USSR

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Bolshaya Berestovitsa near the USSR-Poland border, and that installation probably serves Soviet missile forces in eastern Europe. Identifying information on the installations is as follows:

<u>TDI Name</u>	<u>Geographic Coordinates</u>
Aktash Petroleum Products Storage	39-54-09N 065-54-39E
Belitsa Probable Missile Propellant Storage	53-40-30N 025-23-30E
Bira Bi-Propellant Storage Facility	48-59-50N 132-28-50E
Bolshaya Berestovitsa POL Storage Facility	53-05-50N 023-56-10E
Dzhankoy Petroleum Products Storage Pridorozhnoye	45-47-31N 034-25-10E
Kyzyl-Arvat Petroleum Product Storage SW	38-57-40N 056-14-30E
Navoloki Petroleum Products Storage	57-27-04N 041-56-44E
Perm Missile Propellant Storage & Distribution Facility	57-49-00N 056-25-00E
Rogachevo Petroleum Storage	56-24-06N 038-15-43E
Sovetskaya Gavan Petroleum Storage Vanino	49-05-42N 140-17-58E
Strugi Krasnyye Missile Propellant Storage Facility	58-11-20N 029-00-30E
Varfolomeyevka Bi-Propellant Storage	44-17-00N 133-28-00E

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BASIC DESCRIPTION

4. The 12 probable missile-propellant storage depots have separate facilities for the storage, handling, and distribution of two types of liquids. At each depot, a loop road serves the aboveground storage area and a separate loop road serves the underground storage area. Varfolomeyevka Bi-Propellant Storage Depot (Figure 2) is typical of the storage depots. These depots are similar in design to the smaller bi-propellant storage facilities at airfields which have ASM support facilities.

5. The installation at Sovetskaya Gavan was first observed on photography of August 1960 and was probably complete at that time. The other 11 facilities were constructed between 1962 and 1966, with most of the construction taking place between 1963 and 1965. No significant changes have been observed at any of these sites since 1966.

6. Although it is impossible to determine from photography what is being stored, it is probable that the aboveground storage tanks contain

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red fuming nitric acid (RFNA)¹ or a member of its immediate family of oxidizers. If so, it is probable that underground storage tanks contain a hydrocarbon or amine type of fuel. The properties of these two types of liquids would require storage facilities of the kind present at these depots. Furthermore, RFNA and its associated fuels are the primary propellants for a number of Soviet missile systems.

7. The probable missile-propellant storage depots would be capable of handling RFNA and associated fuels used by a number of Soviet missile system:² the AS-4 KITCHEN, AS-5 KELT, SA-2 GUIDELINE, SS-1 SCUD-A, SS-4 SANDAL, and the SS-5 SKEAN. Transportable oxidizer storage tanks for the SA-2 missile system³ have been observed at three of the depots: Kyzyl-Arvat, Navoloki, and Sovetskaya Gavan. Probable oxidizer transporters for the SS-4 missile system have been observed at Dzhankoy. Railroad tank cars have been seen at all 12 depots, but specific identification features were lacking.

8. Stringent security measures suggest that sensitive materials are being stored. The depots are double fenced and have security patrol roads and guard towers. Depots that are collocated with POL storage facilities are separately fenced, but they share administration, housing, and maintenance facilities.

9. The separation of the liquids being stored probably indicates that they are highly reactive to one another. Liquid transfer from the road and rail spurs is carried out at separate transfer points for above-ground and underground storage areas. The presence of possible vehicle decontamination buildings and rail car decontamination buildings suggests that at least one of the stored liquids is corrosive or otherwise highly toxic.

10. The aboveground storage area contains two or more groups of four horizontal tanks. Each group is under a light-toned gable roof supported by posts. The lack of walls and the placement of storage tanks above ground indicate the need for maximum ventilation to prevent buildup of heat and accumulation of toxic gases. The groups are connected by an extensive network of aboveground pipes. These pipes have numerous expansion joints and appear to be large in diameter, probably because they are covered with heavy insulation. The relatively easy access to both the tanks and pipelines indicates a need for periodic repair or replacement of equipment used in storing a highly corrosive liquid.

11. The underground storage area at each depot contains one or more groups of earth-covered horizontal tanks. These tanks are provided with access hatches, but the number of tanks in each group cannot be determined.

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A small control building or pumphouse in the area apparently has underground pipelines to the tanks. The relative inaccessibility of the pipelines and tanks indicates that they are used for a noncorrosive fuel which poses little threat from accumulation of toxic fumes. Probably they are placed underground for passive temperature control and reduction of fire hazards.

REFERENCES

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MAPS OR CHARTS

US Air Target Charts, Series 200, scale 1:200,000

DOCUMENTS

1. FTD. T68-47654, Properties of Soviet Liquid Propellants, Mar 69 (SECRET/ [REDACTED])
2. FTD. [REDACTED] Identification of Propellants, Facilities, and Capabilities -- Eurasian Communist Countries, 30 Jul 69 (TOP SECRET RUFF [REDACTED])
3. USAMC Redstone Arsenal. MIS-30-63 Ground Support Equipment for Soviet Missile Systems, Dec 63 (SECRET).

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REQUIREMENT

NPIC/IEG/WGD/WURB Project 1432510H

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